

**B.E. POWER ENGINEERING THIRD YEAR FIRST SEMESTER EXAM - 2024****Subject: MANUFACTURING SCIENCE (HONS.) Time: 3 Hours****Full Marks: 100**Answer any **five (5)** questions from the followings.*5 x 20 = 100 Marks*

1. (a) Define green sand in moulding process.  
 (b) What is the composition of green sand?  
 (c) Explain with diagram about the following pattern allowances-  
 (i) Draft allowance (ii) Shake allowance  
 (d) What is parting sand? *4+5+8+3 = 20 Marks*
2. (a) What do you understand by 'rake angle and Flank angle' in turning tool.  
 (b) What are the specifications of a shaping machine?  
 (c) Derive the expression for machining time of a Lathe.  
 (d) What are the operations can be performed by a lathe"? *4+5+7+4 = 20 Marks*
3. (a) What are the different types of chip can be produced during a machining process and write their condition.  
 (b) During straight turning of a 25 mm diameter steel bar at 300 rpm with a HSS tool, a tool life of 10 min. was obtained. When the same bar was turned at 250 rpm, the tool life increased to 52.5 min. What will be the tool life at a speed of 275 rpm?  
 (c) Derive the expression for filling time in case of Bottom gating system. *9+5+6 = 20 Marks*
4. (a). Define welding process?  
 (b) What are the equipments used for 'Manual Metal Arc Welding' Process.  
 (c) Write four welding defects.  
 (d) Explain 'Gas welding process'. *4+5+4+7 = 20 Marks*
5. (a) Define fit? Explain with diagram different types of fit.  
 (b) Explain the term 'Interchangeability' and 'Selective assembly'  
 (c) What do you mean by unilateral tolerance and bilateral tolerance? *9+6+5 = 20 Marks*
6. Write a short note on any **four (4)** from the followings.  
 (a) Knurling process (b) Rolling process (c) Gas welding (d) Quick return mechanism (e) Extrusion process (f) Forging process (g) Casting Defects *4 x 5 = 20 Marks*